IGRA 02: Syntax II

Gradient Symbolic Representations in Syntax

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1. Background

Gradient Harmonic Grammar (Smolensky & Goldrick (2016)):

- Constraints are neither categorical nor ranked; they are associated with weights (Harmonic Grammar).
- Symbols in linguistic expressions are not categorical; they are associated with weights (Gradient Symbolic Representations)

Claim:
Gradient Harmonic Grammar can be used to model *reanalysis* phenomena in syntax, i.e., phenomena where it looks as though two different representations of a linguistic expression must be postulated.

2. Evidence for Reanalysis

2.1. Passive in German

(1) *Control by DP_{ext} into purpose clauses and complement clauses* (Roberts (1987), van Urk (2013)):

a. Der Reifen wurde DP_{ext_1} aufgepumpt $[_{CP}$ PRO_1 um die Fahrt
the tire was inflated in order the journey
fortzusetzen]
to continue

b. Es wurde DP_{ext_1} versucht $[_{CP}$ PRO_1 zu schlafen]
it was tried to sleep

(2) *Principle A and DP_{ext}*:

a. Hier wurde DP_{ext_1} $sich_1$ nicht geprügelt
here was REFL not hit

b. Es wurde DP_{ext_1} $einander_1$ gedankt
it was each other thanked

(3) *Unavailability of control into impersonal passives*(Stechow & Sternefeld (1988, 447-451), Wunderlich (1989), Stechow (1989)):

a. *Er versucht $[_{CP}$ ~~DP_{ext}~~ gearbeitet zu werden]
he tries worked to be

b. *weil $[_{CP}$ bald ~~DP_{ext}~~ geschlafen zu werden] gewünscht wird
because soon slept to be wished is

(4) *Absence of A-intervention (minimality) effects with optional movement to SpecT* (Collins (2005)):

a. dass der $Karl_2$ ihr_3 $[_{vP}$ ~~$DP_{ext,T}$~~ $[_{v'}$ $[_{VP}$ t_3 t_2 vorgestellt] v]] wurde
that the $Karl_{nom}$ her_{dat} introduced was

b. dass ihr_3 $[_{vP}$ ~~$DP_{ext,T}$~~ $[_{v'}$ $[_{VP}$ t_3 der $Karl_2$ vorgestellt] v]] wurde
that her_{dat} the $Karl_{nom}$ introduced was

Conclusion:
(1) and (2) show that DP_{ext} is accessible; (3) and (4) imply that DP_{ext} is not accessible.

2.2. Restructuring in German

Generalization:

- Non-restructuring control infinitives in German behave in all relevant respects like finite embedded clauses and thus uniformly demand a biclausal analysis in terms of CP embedding.
- Restructuring control infinitives in German exhibit both evidence for monoclausality (i.e., for the absence of a CP shell and a TP shell) and evidence for biclausality.

(5) *Scrambling and unstressed pronoun fronting in restructuring environments presupposes inaccessibility of C*:

a. dass den $Fritz_1$ keiner [t_1 zu küssen] versuchte
that the $Fritz_{acc}$ no-one$_{nom}$ to kiss tried

b. *dass die Maria es_1 gestern $[_{CP}$ t_1 zu kennen] geleugnet hat
that the $Maria_{nom}$ it_{acc} yesterday to know denied has

c. *dass den $Fritz_1$ keiner gesagt hat $[_{CP}$ dass wir t_1 einladen sollen]
that the $Fritz_{acc}$ no-one$_{nom}$ said has that we_{nom} invite should

(6) *Scope of negation in restructuring contexts presupposes inaccessibility of C*:

a. dass Maria ihm [das Buch nicht zu lesen] empfiehlt
that $Maria_{nom}$ him_{dat} the $book_{acc}$ not to read recommends
recommend ≫ *not*, *not* ≫ *recommend*

b. dass Maria ihn $[_{CP}$ das Buch nicht zu lesen] auffordert
that $Maria_{nom}$ him_{acc} the $book_{acc}$ not to read requests
request ≫ *not*, **not* ≫ *request*

(7) *Local unstressed pronoun fronting presupposes accessibility of C*:

a. dass sie mir_1 schon letzte Woche [t_1 es_2 zu geben] versucht hat
that she_{nom} me_{dat} already last week it_{acc} to give tried has

b. dass sie mir_1 schon letzte Woche versucht hat [t_1 es_2 zu geben]
that she_{nom} me_{dat} already last week tried has it_{acc} to give

(8) *Extraposition in the third construction presupposes accessibility of C* (Besten & Rutten (1989), Santorini & Kroch (1991), Wöllstein-Leisten (2001)):

a. dass sie ihn$_2$ t$_1$ versucht [$_{CP_1}$ PRO t$_2$ zu küssen]
that she$_{nom}$ him$_{acc}$ tries to kiss

b. dass sie das Buch$_2$ t$_1$ versucht hat [$_{CP_1}$ PRO t$_2$ dem Mann zu geben]
that she$_{nom}$ the book tried has the man$_{dat}$ to give

c. dass es$_2$ Maria t$_1$ (dem Fritz$_3$) verspricht [$_{CP_1}$ PRO t$_1$ zu lesen]
that it$_{acc}$ Maria the Fritz$_{dat}$ promises to read

d. dass es$_2$ Fritz ihr$_3$ t$_1$ empfohlen hat [$_{CP_1}$ PRO t$_1$ zu lesen]
that it$_{acc}$ Fritz$_{nom}$ her$_{dat}$ recommended has to read

Conclusion:
(5) and (6) show that CP is inaccessible; (7) and (8) show that CP is accessible.

3. Structure Removal

3.1. The Approach

Refs.: Müller (2016; 2017a;b)

Assumptions about Remove:

(i) Remove is feature-driven. It is triggered by designated [–F–] features, which are ordered on lexical items.

(ii) Remove may apply to heads or phrases: [–F$_0$–], [–F$_2$–].

(iii) Remove obeys the Strict Cycle Condition.

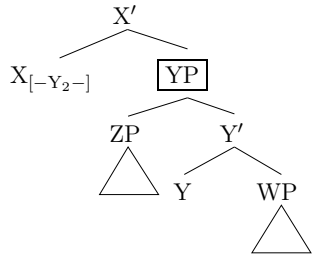
(iv) Remove can be external or internal.

(9) *Strict Cycle Condition* (SCC):
Within the current XP α, a syntactic operation may not exclusively target some item δ in the domain of another XP β if β is in the domain of α.

(10) *Domain* (Chomsky (1995)):
The domain of a head X is the set of nodes dominated by XP that are distinct from and do not contain X.

(11) *Remove and phrases: complements*

a. Merge(X$_{[\bullet Y_2 \bullet] \succ [-Y_2-]}$,YP):

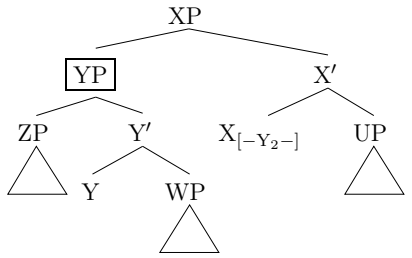


b. Remove(X$_{[-Y_2-]}$,YP):

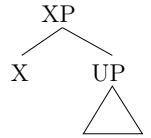
Note: ZP, WP cannot be removed by X because of the Strict Cycle Condition.

(12) *Remove and phrases: specifiers*

a. Merge(X′$_{[\bullet Y_2 \bullet] \succ [-Y_2-]}$,YP):

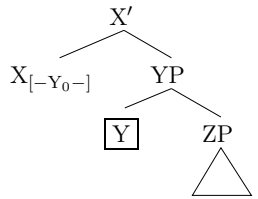


b. Remove(X′$_{[-Y_2-]}$,YP):

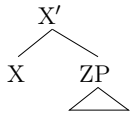


(13) *Remove and heads: complements w/o specifiers*

a. Merge(X$_{[\bullet Y \bullet] \succ [-Y_0-]}$,YP):



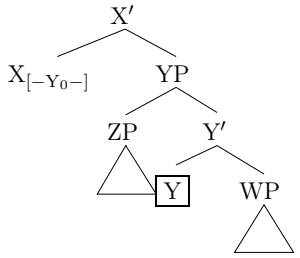
b. Remove(X$_{[-Y_0-]}$,Y):



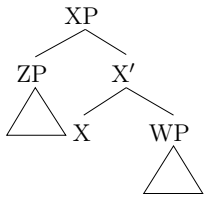
Note:
Since [–F$_0$–] removes the head, it takes away the highest projection, and only this. More deeply embedded material (like ZP) is attached to the head responsible for removal and replaces the original item (YP). If there are two or more items in YP (e.g., ZP, WP), they reassemble in their original structural and linear order in the XP domain. Such a reassociation is *not* an instance of Merge.
Cf. Ross (1967, ch. 3) on tree pruning; Chomsky (1981; 2015) (and Hornstein (2014)) on *that*-trace effects; Heycock & Kroch (1994), Stepanov (2012) on head movement; Embick (2010) on pruning of Ø-affixes. And cf. Pesetsky (2016), Stojković (2017) on Exfoliation.

(14) *Remove and heads: complements with specifiers*

a. Merge($X_{[\bullet Y \bullet] \succ [-Y_0-]}$,YP):



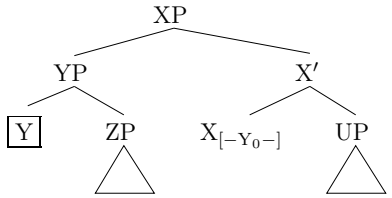
b. Remove($X_{[-Y_0-]}$,Y):



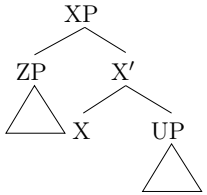
Note:
This opens up the possibility of dislocation without movement.

(15) *Remove and heads: specifiers w/o specifiers*

a. Merge($X'_{[\bullet Y \bullet] \succ [-Y_0-]}$,YP):

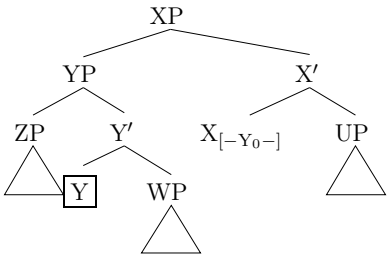


b. Remove($X'_{[-Y_0-]}$,Y):

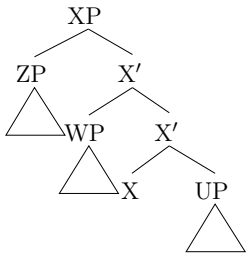


(16) *Remove and heads: specifiers with specifiers*

a. Merge($X'_{[\bullet Y \bullet] \succ [-Y_0-]}$,YP):



b. Remove($X'_{[-Y_0-]}$,Y):



Prediction:
Structure that is affected by Remove is predicted to be accessible in its minimal XP (i.e., from below) but inaccessible outside of its minimal XP (i.e., from above).

3.2. Analysis via Structure Removal

Strategie:
Accessibility of corresponds to presence of X; inaccessibility corresponds to absence of X.

(17) *Passive*:
Passive = [–D_2–] on v.

Analysis:

1. DP_{ext} is merged as Specv and can effect control and binding into its c-command domain.
2. Because of the Strict Cycle Condition, DP_{ext} must be removed by v before the derivation merges vP with T.
3. Therefore, DP_{ext} is not accessible anymore for operations that involve items outside the minimal vP (like control or binding from above, or movement to SpecT).

(18) *Restructuring*:
Restructuring = [–C_0–] $\succ$ [–T_0–] on V.

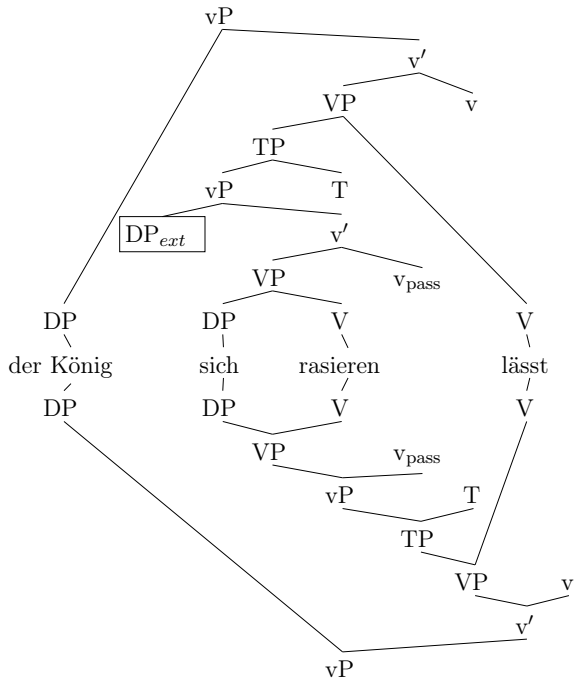
Analysis:

1. CP and TP are present in the infinitival control clause. C licenses unstressed pronoun fronting to Specv in the infinitive, and its presence makes CP extraposition possible.
2. Because of the Strict Cycle Condition, CP and TP are removed by V before the derivation merges matrix VP with matrix v.
3. Therefore, CP and TP are not accessible anymore for operations outside of matrix VP, like movement to the matrix Specv domain or determination of the scope of negation.

4. Multidimensional Representations

Note:
An alternative approach to reanalysis phenomena makes use of *multidimensional representations* or *coanalysis*, i.e., the simultaneous presence of two (or more) separate structure for a given string of lexical items (Huybregts (1982), Bennis (1983), Haegeman & Riemsdijk (1986), Di Sciullo & Williams (1987), Sadock (1991), Pesetsky (1995)).

(19)



Problem:
It needs to be stipulated which operations use the top tree (with DP$_{ext}$) in (19), and which access the bottom tree (without DP$_{ext}$). This follows under structure removal without further ado. The same problem also shows up for the presence vs. absence of CP (TP) with restructural control verbs.

5. Gradient Harmonic Grammar

5.1. Background Assumptions

Strategy:
Reanalysis phenomena in syntax are not accounted for by postulating two representations where some piece of structure X is present in one and absent in the other (as with structure removal and multidimensional representations), but rather by postulating that X is not categorical but active only to some degree, which is captured by assigning to X some real number between 0 and 1. Operations for which X is active are triggered by constraints with a sufficiently large weight; operations for which X is inactive are triggered by constraints with a lower weight.

Assumptions:

- In contrast to what is assumed in much (all?) work in Gradient Harmonic Grammar approaches to phonology (see, e.g., Smolensky & Goldrick (2016), Zimmermann (2017)), I do not assume that all categories need to have a weight of 1.0 in the final output representation; by assumption, the interfaces can interpret a D$_{[0.6]}$ or a C$_{[0.5]}$ as complete, fully regular, discrete D and C items. (And there is no way how the weight of some symbol can be increased from input to output.)
- In contrast to Smolensky & Goldrick (2016) (but in line with Zimmermann (2017)), I assume that constraints other than faithfulness constraints can refer to gradient structure.

5.2. Passive

Basic assumption:
DP$_{ext}$ in the passive is (headed by a) D which has a reduced weight, e.g., 0.5 instead of 1.0.

(20) *Control by DP$_{ext}$ into purpose clauses: Verbal passive vs. adjectival passive*

a. Der Reifen wurde DP$_{ext_1}$ aufgepumpt [$_{CP}$ PRO$_1$ um die Fahrt
the tire$_{nom}$ was/got inflated in order the journey
fortzusetzen]
to continue

b. *Der Reifen war ~~DP$_{ext_1}$~~ aufgepumpt [$_{CP}$ PRO$_1$ um die Fahrt
the tire$_{nom}$ was inflated in order the journey
fortzusetzen]
to continue

c. Den Reifen hat sie$_1$ aufgepumpt [$_{CP}$ PRO$_1$ um die Fahrt
the tire$_{acc}$ has she$_{nom}$ inflated in order the journey
fortzusetzen]
to continue

(21) *Constraints*

a. Inclusiveness:
All material that shows up in an output is present in the input.

b. Control:
*DP if DP minimally c-commands PRO but does not Agree with it.

Note:
(i) Control triggers control, conceived of as establishing the controller's binding index on

the controlled PRO.
(ii) INCLUSIVENESS for present purposes amounts to DEP(Index): Every Agree operation that adds (or valuates) a feature violates INCLUSIVENESS.
(iii) Assumption: If an optimal candidate violates CONTROL and PRO does not receive a binding index, ungrammaticality results (ineffability: the optimal candidate crashes at the LF interface).

(22) *Strength of DP_{ext}*:

a. DP_{ext} in active sentences: [1.0]
b. DP_{ext} in the verbal passive: [0.5]
c. DP_{ext} in the adjectival passive: [0.2]

(23) *DP_{ext} in the verbal passive and control into purpose clauses*:

I: DP_1:[0.5] ... $PRO_{\square}$	INCLUSIVENESS *w = 1.0*	CONTROL *w = 3.0*	*H*
☞O_1: $[_{vP}$ DP_1:[0.5] $[_{v'}$ ... $[_{CP}$ PRO_1 ...]]]	-1.0		-1.0
O_2: $[_{vP}$ DP_2:[0.5] $[_{v'}$ ... $[_{CP}$ $PRO_{\square}$ ...]]]		-0.5	-1.5

(24) *DP_{ext} in an active environment and control into purpose clauses*:

I: DP_1:[1.0] ... $PRO_{\square}$	INCLUSIVENESS *w = 1.0*	CONTROL *w = 3.0*	*H*
☞O_1: $[_{vP}$ DP_1:[1.0] $[_{v'}$ ... $[_{CP}$ PRO_1 ...]]]	-1.0		-1.0
O_2: $[_{vP}$ DP_2:[1.0] $[_{v'}$ ... $[_{CP}$ $PRO_{\square}$ ...]]]		-1.0	-3.0

(25) *DP_{ext} in the adjectival passive and control into purpose clauses*:

I: DP_1:[0.2] ... $PRO_{\square}$	INCLUSIVENESS *w = 1.0*	CONTROL *w = 3.0*	*H*
O_1: $[_{vP}$ DP_1:[0.2] $[_{v'}$ ... $[_{CP}$ PRO_1 ...]]]	-1.0		-1.0
☞O_2: $[_{vP}$ DP_2:[0.2] $[_{v'}$ ... $[_{CP}$ $PRO_{\square}$ ...]]]		-0.2	-0.6

(26) *Absence vs. presence of A-intervention (minimality) effects with optional movement to SpecT* (Collins (2005)):

a. dass der $Karl_2$ ihr_3 $[_{vP}$ ~~$DP_{ext,T}$~~ $[_{v'}$ $[_{VP}$ t_3 t_2 vorgestellt] v]] wurde
that the $Karl_{nom}$ her_{dat} introduced was
b. *dass den $Karl_2$ ihr_3 $[_{vP}$ die $Maria_1$ $[_{v'}$ $[_{VP}$ t_3 t_2 vorgestellt] v]] hat
that the $Karl_{acc}$ her_{dat} the $Maria_{nom}$ introduced has

(27) *Constraints*

a. RELMIN (Relativized Minimality, Rizzi (1990)):
*DP if
(i) DP occupies a position of type Γ,
(ii) DP c-commands β_i of a movement chain δ,
(iii) DP does not m-command β_{i-1} of δ, and

(iv) β_{i-1} occupies a position of type Γ.
b. MC (Merge Condition; Chomsky (1995; 2001),Heck & Müller (2013)):
Structure-building features ([•F•]) participate in Merge.

Note:
(i) RELMIN excludes a movement step of a DP in VP across DP_{ext} in Specv to SpecT (here, Γ of (27-a) stands for A-position; note that derived specifiers of v do not qualify as A-positions, so scrambled items and unstressed fronted pronouns don't intervene).
(ii) MERGE CONDITION triggers movement. Assumption: Optional movement to SpecT in German is brought about by an [•EPP•] feature that is optionally present on T in the numeration, and that is discharged after it has triggered the operation. Further assumption (to simplify exposition): This feature is then also instantiated pre-syntactically on *some* DP.

(28) *DP_{ext} as a non-intervener in passive contexts*:

I: $[_{TP}$ $[_{vP}$ DP_1:[0.5] ... $DP_{2,[EPP]}$ ...] $T_{[•EPP•]}$]	RELMIN *w = 3.0*	MC *w = 2.0*	*H*
☞O_1: $[_{TP}$ $DP_{2,[EPP]}$ $[_{vP}$ DP_1:[0.5] ... t_2 ...] T]	-0.5		-1.5
O_2: $[_{TP}$ $[_{vP}$ DP_1:[0.5] ... $DP_{2,[EPP]}$ ...] $T_{[•EPP•]}$]		-1.0	-2.0

(29) *DP_{ext} as an intervener in active contexts*:

I: $[_{TP}$ $[_{vP}$ DP_1:[1.0] ... $DP_{2,[EPP]}$ ...] $T_{[•EPP•]}$]	RELMIN *w = 3.0*	MC *w = 2.0*	*H*
O_1: $[_{TP}$ $DP_{2,[EPP]}$ $[_{vP}$ DP_1:[1.0] ... t_2 ...] T]	-1.0		-3.0
☞O_2: $[_{TP}$ $[_{vP}$ DP_1:[1.0] ... $DP_{2,[EPP]}$ ...] $T_{[•EPP•]}$]		-1.0	-2.0

5.3. Restructuring

Basic assumption:
Control predicates that optionally trigger restructuring optionally take a CP complement whose C head has a reduced weight, e.g., 0.5 instead of 1.0. Environments with obligatory restructuring can now be assumed to also involve CP, but with a C head with even less weight (e.g., 0.2).

(30) *The third construction*:

a. dass sie ihn_2 t_1 versucht $[_{CP_1}$ PRO t_2 zu küssen]
that she_{nom} him_{acc} tries to kiss
b. *dass sie ihn_2 t_1 sagt $[_{CP_1}$ dass sie t_2 mag]
that she_{nom} him_{acc} tries that she likes
c. *dass sie ihn_2 t_1 ließ $[_{CP}$ t_2 schlafen]
that she_{nom} him_{acc} let sleep

Analysis:
C:[0.5] of a restructuring infinitive of a control predicate is too weak to block long-distance

scrambling (via the PIC, which talks about it) but strong enough to participate in extraposition (via ExtrCrit, which also talks about it).

(31) *Constraints*

a. ExtrCrit:
*$C_{[extr]}$ that is not the head of a CP that is right-adjoined to vP.

b. Inclusiveness:
All material that shows up in an output is present in the input.

Note:
(i) ExtrCrit is a simplification.
(ii) Inclusiveness, among many other things, also prohibits the occurrence of traces (or copies), and thereby blocks movement.

(32) *CP extraposition in the third construction*:

I: $[_{vP}\ [_{VP}\ CP_{[extr]}$:[0.5] V] v]	ExtrCrit *w = 3.0*	Inclusiveness *w = 1.0*	*H*
☞O_1: $[_{vP}\ [_{VP}\ t_{[CP]}$ V] v] $CP_{[extr]}$:[0.5]		-1.0	-1.0
O_2: $[_{vP}\ [_{VP}\ CP_{[extr]}$:[0.5] V] v]	-0.5		-1.5

(33) *CP extraposition without restructuring*:

I: $[_{vP}\ [_{VP}\ CP_{[extr]}$:[1.0] V] v]	ExtrCrit *w = 3.0*	Inclusiveness *w = 1.0*	*H*
☞O_1: $[_{vP}\ [_{VP}\ t_{[CP]}$ V] v] $CP_{[extr]}$:[1.0]		-1.0	-1.0
O_2: $[_{vP}\ [_{VP}\ CP_{[extr]}$:[1.0] V] v]	-1.0		-3.0

(34) *No CP extraposition with obligatory restructuring*:

I: $[_{vP}\ [_{VP}\ CP_{[extr]}$:[0.2] V] v]	ExtrCrit *w = 3.0*	Inclusiveness *w = 1.0*	*H*
O_1: $[_{vP}\ [_{VP}\ t_{[CP]}$ V] v] $CP_{[extr]}$:[0.2]		-1.0	-1.0
☞O_2: $[_{vP}\ [_{VP}\ CP_{[extr]}$:[0.2] V] v]	-0.2		-0.6

(35) *Constraints*:

a. PIC (Phase Impenetrability Condition, Chomsky (2001)):
*C that c-commands α_i of a dependency Δ but does not m-command α_{i-1} of Δ.

b. MC (Merge Condition; Chomsky (1995; 2001),Heck & Müller (2013)):
Structure-building features ([•F•]) participate in Merge.

Note:
(i) PIC is a reformulation of Chomsky's original concept. A dependency can be one established by Agree, or by movement; only the latter is relevant in the present context (i.e., $<\alpha_{i-1}, \alpha_i>$ is a link of a movement chain).

(ii) The relevant feature for MC in the present context is [scr]: Optionally, [•scr•] shows up on v in the numeration, and must be matched by a [scr] feature on some XP.

(36) *Scrambling/unstressed pronoun fronting in the third construction*:

I: $[_{vP}$ ... $[_{CP}$ C:[0.5] ... $DP_{[scr]}$ ...] $v_{[•scr•]}$]	PIC *w = 3.0*	MC *w = 2.0*	*H*
☞O_1: $[_{vP}\ DP_{[scr]}\ [_{CP}$ C:[0.5] ... t_{DP} ...] v]	-0.5		-1.5
O_2: $[_{vP}$ ... $[_{CP}$ C:[0.5] ... $DP_{[scr]}$ ...] $v_{[•scr•]}$]		-1.0	-2.0

Note:
(i) It is presupposed here that long-distance scrambling cannot proceed via SpecC. This follows from various theories of improper movement (e.g., Müller (2014), Wurmbrand (2015)).
(ii) Inclusiveness is ignored here. Ultimately, this constraint implies that the weight for PIC will have to be decreased to 1.0 (and the two constraints yield a gang (cumulative) effect).

(37) *Scrambling/unstressed pronoun fronting without restructuring*:

I: $[_{vP}$ ... $[_{CP}$ C:[1.0] ... $DP_{[scr]}$ ...] $v_{[•scr•]}$]	PIC *w = 3.0*	MC *w = 2.0*	*H*
O_1: $[_{vP}\ DP_{[scr]}\ [_{CP}$ C:[1.0] ... t_{DP} ...] v]	-1		-3.0
☞O_2: $[_{vP}$ ... $[_{CP}$ C:[1.0] ... $DP_{[scr]}$ ...] $v_{[•scr•]}$]		-1.0	-2.0

(38) *Scrambling/unstressed pronoun fronting with obligatory restructuring*:

I: $[_{vP}$ ... $[_{CP}$ C:[0.2] ... $DP_{[scr]}$ ...] $v_{[•scr•]}$]	PIC *w = 3.0*	MC *w = 2.0*	*H*
☞O_1: $[_{vP}\ DP_{[scr]}\ [_{CP}$ C:[0.2] ... t_{DP} ...] v]	-0.2		-0.6
O_2: $[_{vP}$ ... $[_{CP}$ C:[0.2] ... $DP_{[scr]}$ ...] $v_{[•scr•]}$]		-1.0	-2.0

5.4. Discussion

5.4.1. Arguments against Gradient Harmonic Grammar Approaches to Reanalysis

Problem no. 1:
Recall that it correctly follows from the Remove-based approach that the relevant pieces of structure are accessible from below but inaccessible from above. There is no obvious way how one could express this generalization by means of gradient representations; the relative weights of the categories in the representations remain identical throughout, and it's only the varying weights of the constraints that determine whether some piece of structure is accessible or not for a given operation.

Problem no. 2:
There is a conceptual issue: It looks as though constraints must be rephrased so as to talk about the relevant items with strength variation: They are now licensing conditions for these items. Can there be more than one category that a given constraint is a licensing condition

for? It seems that this would be required for cases like (3), and the formulation of the constraint CONTROL (for PRO and for the higher external argument DP).

Problem no. 3:
Reassociation after removal gives rise to new c-command relations (see particularly Müller (2017b)). This can never happen in Gradient Harmonic Grammar because structural relations remain the same throughout. The only way out here, it seems, would be to make c-command sensitive to strength of the intervening items (where a small weight of a category implies that it can be ignored; see Ross (1973b, 393) for a proposal).

5.4.2. Arguments for Gradient Harmonic Grammar Approaches to Reanalysis

Argument no. 1:
In a structure removal approach, the eventual output representation does not contain all items that are needed for semantic interpretation (DP_{ext} is recoverable via existential closure but missing if it does not return from the workspace as a *by*-phrase). This issue does not arise with the gradient representation approach: DP_{ext} is always present.

Argument no. 2:
Iconicity: The more weight a category has, the more likely its lexical realization is. This could straightforwardly be handled in a system where lexical realization (e.g., vocabulary insertion as in Distributed Morphology) is also subject to gradient representations (i.e., it is more likely to be successfull if the weight associated with the abstract syntactic head that insertion is to take place into is higher).

Argument no. 3:
An empirical argument: The Remove-based approach predicts that the third construction behaves identically to ordinary restructuring. However, it is known to be somewhat more restricted (Wöllstein-Leisten (2001)); e.g., some verbs (for some speakers) permit restructuring but not the third construction. Moreover, scope of negation is always clause-bound in the third construction (Santorini & Kroch (1991)). In the Remove-based approach, it is unclear why this should be so. However, in the gradient representations approach, it can be postulated that a C head of a regular restructuring CP has a weight that is somewhat smaller than that of a restructuring CP that undergoes extraposition. The slightly larger weight of the latter CPs then still does not block long-distance scrambling and long-distance unstressed pronoun fronting, but suffices to block long-distance scope of negation.

(39) *Scope of negation in regular restructuring vs. third construction contexts*:

a. dass ich seinen neusten Roman $[_{CP}$ C nicht zu lesen beschlossen habe]
that I his newest $novel_{acc}$ not to read decided have
(ambiguous scope)

b. dass ich seinen neusten Roman beschlossen habe $[_{CP}$ C nicht zu lesen]
that I his newest $novel_{acc}$ decided have not to read
(only narrow scope)

6. Squishy Grammar

Gradient Harmonic Grammar is extremely similar to Squishy Grammar (Ross (1973a;b; 1975)).

(40) *Basic assumptions of Squishy Grammar* (Ross (1973b, 387-388)):

a. "We must allow constituent class membership to a degree."
b. Instead of standard category symbols like [X], there are weighted category symbols of type [αX], where α ranges over the real numbers in [0,1]."
c. Rules, filters, and other types of semantactic processes, are given upper and lower threshold values of α between which they operate.
d. In addition, whereas the system permits a determination of categorical grammaticality status, Ross actually embraces a fine-grained system of gradient output judgements (as in MaxEnt grammar or Noisy Harmonic Grammar, and as systematically assumed in Lakoff's (1973) Fuzzy Grammar).

Consequence:
The approach to reanalysis in passive and restructuring constructions sketched above can directly be transferred to a Squishy Grammar analysis; in fact, Ross is concerned with very similar kinds of evidence (and much more fine-grained distinctions reflected in different weight assigments), based on the concepts of "nouniness" (passive) and "clausematiness" (restructuring).

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